REMARKS

Claims 1, 4-6, and 9-10 are all the claims presently being examined in the application. Claims 9-10 are added. Claim 1 has been amended to recite in part that (in the last paragraph):

"wherein the crack-preventing layer has a dopant concentration lower than that of the n-type contact layer, the dopant concentration of the crack-preventing layer being within a range of 5×10^{16} cm^{-3} to 5×10^{17} cm^{-3}."

It is noted that any claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability.

Further, it is noted that, notwithstanding any claim amendments made herein, Applicant's intent is to encompass equivalents of all claim elements, even if amended herein or later during prosecution.

Claims 1 and 4-6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over NAGAHAMA, et al. (U.S. Patent Application Publication No. US 2005/0121679 A1), and further in view of KANO (U.S. Patent No. 6,388,275 B1).

While Applicant completely disagrees with the Examiner's rejections, claim 1 has been amended, thereby to render moot the rejections, and pass to all of the claims to allowance, as described below. No new matter has been added.

THE PRIOR ART REJECTION

First, Applicant respectfully submits that the Examiner has misinterpreted the invention.

A feature of the claimed invention is that the crack-preventing layer has a low dopant concentration of within a range of 5×10^{16} cm^{-3} to 5×10^{17} cm^{-3}.

The Examiner asserts that NAGAHAMA, et al., teaches that the concentration of dopants may be in a range of 1 x 10^{17} cm^{-3} to 1 x 10^{21} cm^{-3}. However, NAGAHAMA, et al., merely discloses this range of the dopant concentration in connection with the contact layer, not with a crack-preventing layer.

Further, the Examiner asserts that "[s]till lacking from Nagahama... is the n-type contact layer within a range of 5 x 10^{16}/cm^3 to 5 x 10^{17}/cm^3." (see first paragraph on page 4 of the Office Action), and "[h]owever, as explained in the rejection above, the dopant concentration in the contact region is...." (see paragraph 4, on page 5 of the Office Action).

Thus, the Examiner is respectfully believed to have misinterpreted the invention.

Applicant submits Claim 1 is now amended to clearly and distinctly define the features of the present invention, and that the specific combination of features of the present invention is neither disclosed nor suggested in the cited references, either alone or in combination.

An important point is that low dopant concentration is not adopted by one of ordinary skill in the art, because a decrease of the dopant concentration causes an increased resistance of the crack-preventing layer. Accordingly, it would have been natural for one of ordinary skill in the art to select a higher dopant concentration for avoiding such a disadvantage (see Page 6, lines 22-26, of the present specification).

In this regard, NAGAHAMA, et al. teaches (and the Examiner admits on Page 3 of the Office Action) that the concentration of dopants is preferably in a range of 1 x 10^{18} cm^{-3} to 1 x 10^{19} cm^{-3}, to keep down series resistance as well as leakage current.

The present inventor selected the range of the dopant concentration for the purpose of preventing cracks. The features of the present invention of "the crack-preventing layer

having a low dopant concentration" is neither disclosed nor suggested in the references, either alone or in combination.

On the other hand, the Examiner asserts that the arguments: "one of ordinary skill in the art would not dope a crack-preventing layer in this range due to the increase in resistance." is not persuasive, since "it has been established that lower dopant concentrations have benefits (better crystal quality and lower leakage) as well as drawbacks (increased resistance)". (see paragraph 5, on page 5 of the Office Action; *Response to Arguments*)

The Examiner's assertion is improper and unreasonable. Leakage current in the context of dopant concentration may be taken into consideration, for example, as to an integrated circuit in which a plurality of electronic active elements (i.e., transistors) are formed horizontally or embedded in a semiconductor layer. However, as to a vertical two-terminal discrete device like the light emitting device of the present invention (e.g., see specifically new dependent claim 9), leakage current is not essentially a problem since a driving current for light emission simply flows in a single direction (i.e., vertically) from one terminal to the other (e.g., see specifically new dependent claim 10). Accordingly, increased resistance is essentially a problem for this kind of device.

Additionally, crystal quality in the context of dopant concentration is not a problem where the dopant concentration is in the order of 10^{18} cm^{-3} ($1E18cm^{-3}$). In this regard, NAGAHAMA teaches, and the Examiner admits (see page 3 of the Office Action dated May 31, 2007), that the concentration of dopants is preferably in a range of $1 \times 10^{18} cm^{-3}$ to $1 \times 10^{19} cm^{-3}$, to keep down series resistance down as well as leakage current.

Therefore, one of ordinary skill in the art would focus on the increase in resistance (i.e., no need to take the "crystal quality and lower leakage" into consideration) when determining a dopant concentration of the crack-preventing layer (see, page 6, line 22-page 7,

line 15 of the Description). So, it would have been natural for one of ordinary skill in the art to adopt higher dopant concentration for avoiding the drawback of increased resistance.

The present inventor dared to select this range of the dopant concentration for the purpose of preventing cracks. The combination of features of the present invention including "the crack-preventing layer having a low dopant concentration" is neither disclosed nor suggested by NAGAHAMA, either alone or in combination, with Kano.

Indeed, Kano fails to make up for the deficiencies of NAGAHAMA.

Further, there is no teaching or suggestion of new claims 9-10.

FORMAL MATTERS AND CONCLUSION

In view of the foregoing, Applicant submits that claims 1, 4-6, and 9-10, all the claims presently being examined in the application, are patentably distinct over the prior art of record and are in condition for allowance. Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiencies in fees or to credit any overpayment of fees to Attorney's Deposit Account No. 50-0481.

Respectfully submitted,

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